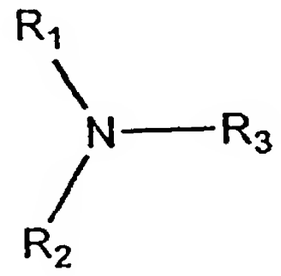
WHAT IS CLAIMED IS:

1. A catalyst for producing a rigid polyurethane foam by means of at least one blowing agent selected from the group consisting of 1,1,1,3,3-pentafluoropropane (HFC-245fa), 1,1,1,3,3-pentafluorobutane (HFC-365mfc) and a low boiling point hydrocarbon, which comprises:

(A) an amine compound of the following formula (1):



(1)

wherein each of R_1, R_2 and R_3 which are independent of one another, is a C_{1-20} alkyl group, and at least one amine compound selected from the group consisting of triethylenediamine, N,N,N',N'-tetramethyl-1,6-hexanediamine and N,N-dimethylcyclohexylamine; or

(B) an amine compound having an alkyl ether group and/or an aryl ether group in its molecule.

2. The catalyst for producing a rigid polyurethane foam according to Claim 1, wherein in the formula (1), each of R_1, R_2 and R_3 which are independent of one another, is a methyl group, an ethyl group, a propyl group, a butyl group, a pentyl group, a hexyl group, a heptyl group, an octyl group, a nonyl group, a decyl group, an undecyl group, a dodecyl group, a tridecyl group, a tetradecyl group, a heptadecyl group or a hexadecyl group.

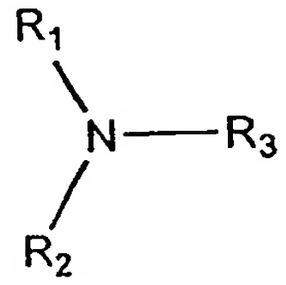
3. The catalyst for producing a rigid polyurethane foam

according to Claim 1, wherein the amine compound of the formula (1) is at least one amine compound selected from the group consisting of trimethylamine, dimethylethylamine, dimethylpropylamine, dimethylbutylamine, dimethylpentylamine, dimethylhexylamine, dimethylheptylamine, dimethyloctylamine, dimethylnonylamine, dimethyldecylamine, dimethylundecylamine, dimethyldodecylamine, dimethyltridecylamine, dimethyltetradecylamine, dimethylpentadecylamine and dimethylhexadecylamine.

4. The catalyst for producing a rigid polyurethane foam according to Claim 1, wherein the composition of the amine compound of the formula (1) and said at least one amine compound selected from the group consisting of triethylenediamine, N,N,N',N'-tetramethyl-1,6-hexanediamine and N,N-dimethylcyclohexylamine, comprises from 10 to 95 wt% of the amine compound of the formula (1) and from 90 to 5 wt% of said at least one amine compound selected from the group consisting of triethylenediamine, N,N,N',N'-tetramethyl-1,6-hexanediamine and N,N-dimethylcyclohexylamine.

5. A catalyst for producing a rigid polyisocyanurate foam by means of at least one blowing agent selected from the group consisting of 1,1,1,3,3-pentafluoropropane (HFC-245fa), 1,1,1,3,3-pentafluorobutane (HFC-365mfc) and a low boiling point hydrocarbon, which comprises an

aliphatic amine compound of the following formula (1):



(1)

wherein each of R_1, R_2 and R_3 which are independent of one another, is a C_{1-20} alkyl group, and a polyisocyanurate catalyst.

6. The catalyst for producing a rigid polyisocyanurate foam according to Claim 5, wherein in the formula (1), each of R_1, R_2 and R_3 which are independent of one another, is a methyl group, an ethyl group, a propyl group, a butyl group, a pentyl group, a hexyl group, a heptyl group, an octyl group, a nonyl group, a decyl group, an undecyl group, a dodecyl group, a tridecyl group, a tetradecyl group, a heptadecyl group or a hexadecyl group.

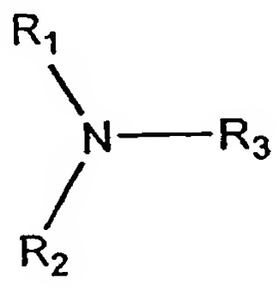
7. The catalyst for producing a rigid polyisocyanurate foam according to Claim 5, wherein the amine compound of the formula (1) is at least one amine compound selected from the group consisting of dimethylethylamine, dimethylpropylamine, dimethylbutylamine, dimethylpentylamine, dimethylhexylamine, dimethylheptylamine, dimethyloctylamine, dimethylnonylamine, dimethyldecylamine, dimethylundecylamine, dimethyldodecylamine, dimethyltridecylamine, dimethyltetradecylamine, dimethylpentadecylamine and dimethylhexadecylamine.

8. The catalyst for producing a rigid polyisocyanurate foam according to Claim 5, wherein the polyisocyanurate catalyst is at least one polyisocyanurate catalyst selected from the group consisting of organic metal type catalysts such as alkali metal salts of carboxylic acids, alkaline earth metal salts of carboxylic acids, metal alcoholates, metal phenolates and metal hydroxides, tertiary amines, tertiary phosphines, onium salt compounds of phosphorus and quaternary ammonium salts.

9. The catalyst for producing a rigid polyisocyanurate foam according to Claim 5, wherein the composition of the aliphatic amine compound of the formula (1) and the polyisocyanurate catalyst, comprises from 10 to 90 wt% of the aliphatic amine compound of the formula (1) and from 90 to 10 wt% of the polyisocyanurate catalyst.

10. A process for producing a rigid polyurethane foam, which comprises reacting a polyol with a polyisocyanate in the presence of an amine catalyst and a blowing agent, wherein the amine catalyst is:

(A) a catalyst composition comprising an amine compound of the following formula (1):



(1)

wherein each of R_1, R_2 and R_3 which are independent of one another, is a C_{1-20} alkyl group, and at least one compound

selected from the group consisting of triethylenediamine, N,N,N',N'-tetramethyl-1,6-hexanediamine and N,N-dimethylcyclohexylamine; or

(B) a catalyst comprising an amine compound having an alkyl ether group and/or an aryl ether group in its molecule; and the blowing agent is:

at least one blowing agent selected from the group consisting of 1,1,1,3,3-pentafluoropropane (HFC-245fa), 1,1,1,3,3-pentafluorobutane (HFC-365mfc) and a low boiling point hydrocarbon.

11. The process for producing a rigid polyurethane foam according to Claim 10, wherein in the formula (1), each of R_1, R_2 and R_3 which are independent of one another, is a methyl group, an ethyl group, a propyl group, a butyl group, a pentyl group, a hexyl group, a heptyl group, an octyl group, a nonyl group, a decyl group, an undecyl group, a dodecyl group, a tridecyl group, a tetradecyl group, a heptadecyl group or a hexadecyl group.

12. The process for producing a rigid polyurethane foam according to Claim 10, wherein the amine compound of the formula (1) is at least one amine compound selected from the group consisting of trimethylamine, dimethylethylamine, dimethylpropylamine, dimethylbutylamine, dimethylpentylamine, dimethylhexylamine, dimethylheptylamine, dimethyloctylamine, dimethylnonylamine, dimethyldecylamine, dimethylundecylamine,

dimethyldodecylamine, dimethyltridecylamine, dimethyltetradecylamine, dimethylpentadecylamine and dimethylhexadecylamine.

13. The process for producing a rigid polyurethane foam according to Claim 10, wherein the composition of the amine compound of the formula (1) and said at least one amine compound selected from the group consisting of triethylenediamine, N,N,N',N'-tetramethyl-1,6-hexanediamine and N,N-dimethylcyclohexylamine, comprises from 10 to 95 wt% of the amine compound of the formula (1) and from 90 to 5 wt% of said at least one amine compound selected from the group consisting of triethylenediamine, N,N,N',N'-tetramethyl-1,6-hexanediamine and N,N-dimethylcyclohexylamine.

14. The process for producing a rigid polyurethane foam according to Claim 10, wherein the low boiling point hydrocarbon is a hydrocarbon having a boiling point of from -30 to 90°C.

15. The process for producing a rigid polyurethane foam according to Claim 14, wherein the hydrocarbon having a boiling point of from -30 to 90°C, is at least one hydrocarbon selected from the group consisting of propane, butane, 2-methylpropane, pentane, cyclopentane, 2-methylbutane, 2,2-dimethylpropane, cyclopropane, hexane, 2-methylpentane, 3-methylpentane, 2,2-dimethylbutane, cyclohexane, 2,4-dimethylpropane, 3,3-dimethylpropane and 2,2,3-trimethylbutane.

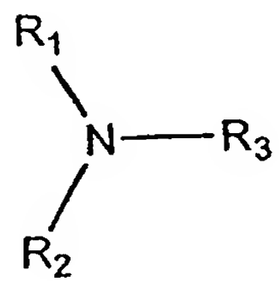
16. The process for producing a rigid polyurethane foam according to Claim 10, wherein the amine catalyst is used in an amount of from 0.01 to 20 parts by weight per 100 parts by weight of the polyol.

17. The process for producing a rigid polyurethane foam according to Claim 10, wherein a foam stabilizer is used as an auxiliary agent.

18. The process for producing a rigid polyurethane foam according to Claim 10, wherein a cross-liking agent and/or a chain extender is used as an auxiliary agent.

19. The process for producing a rigid polyurethane foam according to Claim 10, wherein a flame retardant is used as an auxiliary agent.

20. A process for producing a rigid polyisocyanurate foam, which comprises reacting a polyol with a polyisocyanate in the presence of a catalyst and a blowing agent, wherein the catalyst is a catalyst composition comprising an aliphatic amine compound of the following formula (1):



(1)

wherein each of R_1, R_2 and R_3 which are independent of one another, is a C_{1-20} alkyl group, and a polyisocyanurate catalyst, and the blowing agent is at least one blowing agent selected from the group consisting of 1,1,1,3,3-

pentafluoropropane (HFC-245fa), 1,1,1,3,3-pentafluorobutane (HFC-365mfc) and a low boiling point hydrocarbon.

21. The process for producing a rigid polyisocyanurate foam according to Claim 20, wherein in the formula (1), each of R_1, R_2 and R_3 which are independent of one another, is a methyl group, an ethyl group, a propyl group, a butyl group, a pentyl group, a hexyl group, a heptyl group, an octyl group, a nonyl group, a decyl group, an undecyl group, a dodecyl group, a tridecyl group, a tetradecyl group, a heptadecyl group or a hexadecyl group.

22. The process for producing a rigid polyisocyanurate foam according to Claim 20, wherein the aliphatic amine compound of the formula (1) is at least one amine compound selected from the group consisting of dimethylethylamine, dimethylpropylamine, dimethylbutylamine, dimethylpentylamine, dimethylhexylamine, dimethylheptylamine, dimethyloctylamine, dimethylnonylamine, dimethyldecylamine, dimethylundecylamine, dimethyldodecylamine, dimethyltridecylamine, dimethyltetradecylamine, dimethylpentadecylamine and dimethylhexadecylamine.

23. The process for producing a rigid polyisocyanurate foam according to Claim 20, wherein the polyisocyanurate catalyst is at least one polyisocyanurate catalyst selected from the group consisting of organic metal type

catalysts such as alkali metal salts of carboxylic acids, alkaline earth metal salts of carboxylic acids, metal alcoholates, metal phenolates and metal hydroxides, tertiary amines, tertiary phosphines, onium salt compounds of phosphorus and quaternary ammonium salts.

24. The process for producing a rigid polyisocyanurate foam according to Claim 20, wherein the composition of the aliphatic amine compound of the formula (1) and the polyisocyanurate catalyst, comprises from 10 to 90 wt% of the aliphatic amine compound of the formula (1) and from 90 to 10 wt% of the polyisocyanurate catalyst.

25. The process for producing a rigid polyisocyanurate foam according to Claim 20, wherein the catalyst composition comprising the aliphatic amine of the formula (1) and the polyisocyanurate catalyst, is used in an amount of from 0.01 to 40 parts by weight per 100 parts by weight of the polyol.

26. The process for producing a rigid polyisocyanurate foam according to Claim 20, wherein a foam stabilizer is used as an auxiliary agent.

27. The process for producing a rigid polyisocyanurate foam according to Claim 20, wherein a cross-liking agent and/or a chain extender is used as an auxiliary agent.

28. The process for producing a rigid polyisocyanurate foam according to Claim 20, wherein a flame retardant is used as an auxiliary agent.